

Application Serial No. 10/718,184
Response to Office Action dated July 17, 2007
Amendment dated August 21, 2007

Amendments to the Claims:

The listing of claims will serve to replace all prior versions of the claims in the application.

Listing of Claims:

1 1. (currently amended) In a fuel injector assembly, for dispensing fuel in the
2 combustion chamber of a gas turbine engine, having a contoured outer housing, attached
3 on one end to an engine casing, fully enveloping a contoured deformable fuel feed,
4 fixedly attached at one end thereof to a housing inlet and having a nozzle tip adapter
5 assembly operatively connected therewith at another end, attached at a housing outlet
6 end, said fuel feed being otherwise separated from said housing by a peripheral insulating
7 space wherein the improvement comprises:

8 a. said housing outlet end having a first contoured surface portion; and

9 b. said nozzle assembly including a movable nozzle spray-tip having a second
10 contoured surface portion in complementary mating engagement with said housing first
11 contoured surface portion, resulting in relative motion therebetween upon the operation
12 of said gas turbine engine, as a result of the thermal expansion differential arising due to
13 the differing temperatures of said housing and said fuel feed, wherein said first and
14 second contoured surface portions are interior and exterior contoured surfaces,
15 respectively, and wherein each of said contoured surface portions includes at least a
16 portion of a spherical surface component.

1 2. (cancelled) The improved fuel injector assembly of claim 1, wherein said first and
2 second contoured surface portions are interior and exterior contoured surfaces,
3 respectively.

1 3. (currently amended) The improved fuel injector assembly of claim 1, In a fuel
2 injector assembly, for dispensing fuel in the combustion chamber of a gas turbine engine,
3 having a contoured outer housing, attached on one end to an engine casing, fully

Application Serial No. 10/718,184
Response to Office Action dated July 17, 2007
Amendment dated August 21, 2007

4 enveloping a contoured deformable fuel feed, fixedly attached at one end thereof to a
5 housing inlet and having a nozzle tip adapter assembly operatively connected therewith at
6 another end, attached at a housing outlet end, said fuel feed being otherwise separated
7 from said housing by a peripheral insulating space wherein the improvement comprises:

8 a. said housing outlet end having a first contoured surface portion; and
9 b. said nozzle assembly including a movable nozzle spray-tip having a second
10 contoured surface portion in complementary mating engagement with said housing first
11 contoured surface portion, resulting in relative motion therebetween upon the operation
12 of said gas turbine engine, as a result of the thermal expansion differential arising due to
13 the differing temperatures of said housing and said fuel feed, wherein said first and
14 second contoured surface portions are exterior and interior surfaces, respectively, and
15 wherein each of said contoured surface portions includes at least a portion of a spherical
16 surface component.

1 4. (currently amended) The improved fuel injector assembly of claim 2 1, wherein
2 said contoured surface portions are curved.

1 5. (original) The improved fuel injector assembly of claim 3, wherein said
2 contoured surface portions are curved.

1 6. (cancelled) The improved fuel injector assembly of claim 2, wherein each of said
2 contoured surface portions includes at least a portion of a spherical surface component.

1 7. (cancelled) The improved fuel injector assembly of claim 3, wherein each of said
2 contoured surface portions includes at least a portion of a spherical surface component.

1 8. (cancelled) The improved fuel injector assembly of claim 1, wherein said housing
2 outlet end further includes a shroud, with said shroud including said first contoured
3 surface portion.

1 9. (previously presented) The improved fuel injector assembly of claim 8, wherein
2 each of said contoured surface portions include a curved portion.

1 10. (currently amended) The improved fuel injector assembly of claim 8, In a fuel
2 injector assembly, for dispensing fuel in the combustion chamber of a gas turbine engine,
3 having a contoured outer housing, attached on one end to an engine casing, fully
4 enveloping a contoured deformable fuel feed, fixedly attached at one end thereof to a
5 housing inlet and having a nozzle tip adapter assembly operatively connected therewith at
6 another end, attached at a housing outlet end, said fuel feed being otherwise separated
7 from said housing by a peripheral insulating space wherein the improvement comprises:

8 a. said housing outlet end having a first contoured surface portion; and

9 b. said nozzle assembly including a movable nozzle spray-tip having a second
10 contoured surface portion in complementary mating engagement with said housing first
11 contoured surface portion, resulting in relative motion therebetween upon the operation
12 of said gas turbine engine, as a result of the thermal expansion differential arising due to
13 the differing temperatures of said housing and said fuel feed, wherein each of said
14 contoured surface portions includes at least a partly spherical surface component, and
15 wherein said housing outlet end further includes a shroud, with said shroud including said
16 first contoured surface portion.

1 11. (original) The improved fuel injector assembly of claim 8, wherein said housing
2 outlet end further includes an adaptor member, interposed between said housing outlet
3 end and said shroud, said adaptor member including a further contoured surface portion.

Application Serial No. 10/718,184
Response to Office Action dated July 17, 2007
Amendment dated August 21, 2007

1 12. (previously presented) The improved fuel injector assembly of claim 11, wherein
2 said nozzle spray-tip contoured surface portion is in complementary mating engagement
3 with both of said first and further contoured surface portions.

1 13. (original) The improved fuel injector assembly of claim 12, wherein said first and
2 further contoured surface portions are also axially movable relative to each other.

1 14. (original) The improved fuel injector assembly of claim 12, wherein each of said
2 contoured surface portions includes at least a portion of a spherical surface component.

1 15. (previously presented) In a fuel injector assembly, for dispensing fuel in the
2 combustion chamber of a gas turbine engine, having a shaped outer housing, attached at
3 one end to an engine casing, fully enveloping a shaped metal fuel feed line, affixed at one
4 end thereof to a housing inlet and having a nozzle assembly operatively connected
5 therewith at another end, affixed to a housing outlet end via a shroud and an intermediate
6 adaptor member, said fuel feed line being otherwise separated from said housing by a
7 surrounding insulating, space, wherein the improvement comprises:

- 8 a. said shroud and said adaptor member both including spaced first and
9 second contoured surface portions, respectively; and
- 10 b. said nozzle assembly including a movable nozzle spray-tip, having a third
11 contoured surface portion mating with both said first and second
12 contoured surface portions, resulting in pivotal relative motion
13 therebetween upon the operation of said gas turbine engine, as a result of
14 the thermal expansion differential arising from the differing temperatures
15 of said housing and said fuel feed line.

1 16. (original) The improved fuel injector assembly of claim 15, wherein each of said
2 contoured surface portions is curved.

1 17. (original) The improved fuel injector assembly of claim 15, wherein each of said
2 contoured surface portions includes at least a portion of a spherical surface component.

1 18. (previously presented) The improved fuel injector assembly of claim 17, wherein
2 said first and second contoured spherical surface components are also axially movable
3 relative to each other.

1 19. (currently amended) An improved fuel injector assembly, for use in an engine,
2 including a curved outer housing, fixedly retained on one end at an engine casing, fully
3 enclosing a curved metal fuel feed member, said feed member being affixed at an outer
4 end to a housing inlet end and having a nozzle assembly operatively connected therewith
5 at an inner end thereof, said nozzle assembly being yieldingly attached at a housing outlet
6 end, said fuel feed member being otherwise spaced from said housing via a peripheral
7 insulating space, said improvement comprising:

8 a. said housing outlet end including at least one shaped curved surface
9 portion; and

10 b. said nozzle assembly including a movable nozzle spray-tip having another
11 shaped curved surface portion complementarily matingly conforming with and
12 being in contact with said at least one shaped surface portion, resulting in
13 relative motion therebetween upon the operation of said engine, as a result of
14 the thermal expansion differential arising due to the differing temperatures of
15 said housing and said fuel feed member, and wherein at least one of said
16 curved surface portions includes at least a portion of a spherical surface
17 component.

- 1 20. (cancelled) The improved fuel injector assembly of claim 19, wherein each of
2 said shaped surface portions is at least partially curved.
- 1 21. (currently amended) The improved fuel injector assembly of claim ~~20~~ 19,
2 wherein said at least one curved surface portion is an interior surface portions and said
3 another curved surface portion is an exterior surface portion.
- 1 22. (currently amended) The improved fuel injector assembly of claim ~~20~~ 19,
2 wherein said at least one curved surface portion is an exterior surface portion and said
3 another curved surface portion is an interior surface portion.
- 1 23. (cancelled) The improved fuel injector assembly of claim 20, wherein at least one
2 of said curved surface portions includes at least a portion of a spherical surface
3 component.
- 1 24. (previously presented) The improved fuel injector assembly of claim 23, wherein
2 at least one of said spherical surface components is one of an interior and exterior
3 surface component and said another shaped surface portion is one of an exterior and
4 interior surface component, respectively.
- 1 25. (currently amended) The improved fuel injector assembly of claim ~~20~~ 19,
2 wherein said at least one shaped portion includes a second curved surface portion, with
3 said at least one and second shaped portions also being axially movable relative to each
4 other.

Application Serial No. 10/718,184
Response to Office Action dated July 17, 2007
Amendment dated August 21, 2007

1 26. (previously presented) The improved fuel injector assembly as in claim 15,
2 wherein the nozzle assembly includes a transition zone between the fuel feed line and the
3 nozzle spray tip.